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Pluto/Charon Mass Ratio Determined From HST Observations in 1991-93

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We have analyzed Hubble Space Telescope WF/PC I images of Pluto, Charon, and a field star, acquired on seven HST visits over a 3.1-day span in August 1993, to observe Pluto's motion about the Pluto system barycenter and to determine the individual masses and densities of Pluto and Charon. These images enabled a significant improvement of our earlier solution (Null, Owen, and Synnott, *AJ* 105, 2319, 1993) which used a similar data set obtained in 1991.

The camera distortion model was improved using 14 frames of star cluster NGC 1850 taken between 1990 and 1993. These frames were taken at different telescope roll angles, enabling us to determine a significant (1 part/4000), previously unmodeled non-orthogonality between the row and column axes of the CCD chip. Distortion stability was also verified.

Analyses of the 1991 and 1993 Pluto data sets, both individually and together, gave values for the Charon/Pluto mass ratio which are in good agreement. These values are significantly higher than our previous mass-ratio solution of 0.0837 and are significantly lower than a ground-based solution of 0.1543 obtained by Young et al. (*BAAS* 25, 1137, 1993). Values and error estimates for masses, densities and other important solution parameters will be presented. This work was performed with partial support from Space Telescope Science Institute.

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